IN THE CLAIMS:

Please cancel without prejudice or surrender of subject matter Claims 1-34 and add the claims as indicated below.

Claims 1-34 (canceled)

34. (New) An emission electron source comprising:

a cathode electrode disposed on a substrate, the cathode electrode for providing a source of electrons;

an emitter layer disposed over said cathode electrode and formed from a composition of an embedding material and one or a plurality of nano-structures embedded therein, the emitter layer having a surface, the nano-structures being truncated parallel to the surface and having portions protruding above the surface to emit electrons;

an insulator disposed over the emitter layer, the insulator having one or a plurality of apertures, each exposing at least the ends of the nano-structures in the emitter layer; and

a gate electrode disposed over the insulator and having one or plurality of apertures, wherein each aperture is concentrically self-aligned with the end of one of the nano-structures, so as to expose a single nanostructure and provide each nano-structure with substantially the same emitter-to-gate distance, the gate electrode being operative to control the emission of electrons through the apertures from the exposed nano-structures;

wherein the nano-structures have a coating for enhanced field emission performance.

35. (New) An emission electron source comprising:

a cathode electrode disposed on a substrate, the cathode electrode for providing a source of electrons;

an emitter layer disposed over said cathode electrode and formed from a composition of an embedding material and one or a plurality of nano-structures embedded therein, the emitter layer having a surface, the nano-structures being truncated parallel to the surface and having portions protruding above the surface to emit electrons;

an insulator disposed over the emitter layer, the insulator having one or a plurality of apertures, each exposing at least the ends of the nano-structures in the emitter layer; and

a gate electrode disposed over the insulator and having one or plurality of apertures, wherein each aperture is concentrically self-aligned with the end of one of the nano-structures, so as to expose a single nanostructure and provide each nano-structure with substantially the same emitter-to-gate distance, the gate electrode being operative to control the emission of electrons through the apertures from the exposed nano-structures.

36. (New) An electron source as recited in claim 35, wherein said nano-structures are substantially vertical.

37. (New) An electron source as recited in claim 35, wherein said nano-structures are individually spaced apart.

38. (New) An electron source as recited in claim 35, wherein said emitter-to-gate distance for each nano-structure is substantially less than one micrometer.

39. (New) An electron source as recited in claim 35, wherein the nano-structures have a surface density substantially higher than $10^6/cm^2$.

40. (New) An electron source as recited in claim 35, wherein the nano-structures protrude above the surface of the emitting layer for not more than half of one micrometer.

41. (New) An electron source as recited in claim 35, wherein the apertures in the insulator expose the entire protrusion portion of the nano-structures in the emitting layer.

42. (New) An electron source as recited in claim 35, wherein the nano-structures have at least one of their three dimensions in the nanometer range.

43. (New) An electron source as recited in claim 35, wherein the nano-structures include

nano-tubes, nano-wires, nano-fibers, and nano-cones.

44. (New) An electron source as recited in claim 35, wherein the nano-structures have a coating for enhanced field emission performance.

45. (New) An electron source as recited in claim 35, wherein the nano-structures are selected from a group of materials consisting of carbon, refractory metals and alloys, conductive ceramics, conductive ceramic composites, and doped semiconductors.

46. (New) An electron source as recited in claim 45, wherein the carbon includes carbon nano-tube, carbon nano-fiber, and carbon nano-cone.

47. (New) An electron source as recited in claim 35, wherein the nano-structures comprise a nonconductive core and a conductive shell.

48. (New) An electron source as recited in claim 47, wherein the nonconductive core is made from one of wide band gap semiconductors, including diamond, BN, AlN, AlGaN, GaN, GaAs, SiC, and ZnO.

49. (New) An electron source as recited in claim 35, wherein the embedding material is comprised of at least two layers.

50. (New) An electron source as recited in claim 49, wherein the first layer of the embedding material is conductive.

51. (New) An electron source as recited in claim 35, wherein the insulator and the embedding material are composed of the same dielectric material.

52. (New) An electron source as recited in claim 35, wherein said insulator functions also as the embedding material.

53. (New) An electron source as recited in claim 35,

wherein the cathode electrode is configured as a plurality of electrically isolated cathode electrodes, each for supplying an independent source of electrons;

wherein the gate electrode is configured as a plurality of electrically isolated electrodes, each intersecting with said cathode electrodes and having one or a plurality of apertures at each intersections, each gate electrode being operative to control the emission of electrons through the apertures along the gate electrode; and

wherein activation of a selected cathode and a selected gate electrode determines an intersection where the nano-structures emit electrons.

54. (New) An electron source comprising:

a substrate;

electrode means, disposed over the substrate, for providing a source of electrons;

means, disposed over the source means, for emitting electrons provided by the source means, the emitting means including a one or a plurality of nano-structure emitting means for providing a flow of electrons and means for supporting the nano-structure emitting means;

an insulator disposed over the emitting means; and

one or a plurality of gating means, disposed over the insulator, for controlling the flow of electrons emitted by the nano-structure emitting means, each of said gating means arranged symmetrically relative to one of the nano-structure emitting means.

55. (New) An electron source as recited in claim 54, wherein the insulator and the gating means each include one or more apertures that expose the nano-structure emitting means.

56. (New) An electron source as recited in claim 54, wherein the nano-structure emitting means has at least one of its three dimensions in the nanometer range.

57. (New) An electron source as recited in claim 54, wherein the nano-structure emitting means includes carbon nano-tube, carbon nano-fiber, and carbon nano-cones.

58. (New) An electron source as recited in claim 54, wherein the nano-structure emitting means is substantially vertical.

59. (New) An electron source as recited in claim 54, wherein the nano-structure emitting means is an array of individually spaced apart nano-structures.

60. (New) A display comprising:

an electron source that includes:

a cathode electrode disposed on a substrate, the cathode electrode for providing a source of electrons;

an emitter layer disposed over said cathode electrode and formed from a composition of an embedding material and one or a plurality of nano-structures embedded therein, the emitter layer having a surface, the nano-structures being truncated parallel to the surface and having portions protruding above the surface to emit electrons;

an insulator disposed over the emitter layer, the insulator having one or a plurality of apertures, each exposing at least the ends of the nano-structures in the emitter layer; and

a gate electrode disposed over the insulator and having one or plurality of apertures, wherein each aperture is concentrically self-aligned with the end of one of the nano-structures, so as to expose a single nanostructure and provide each nano-structure with substantially the same emitter-to-gate distance, the gate electrode being operative to control the emission of electrons through the apertures from the exposed nano-structures; and

an anode plate including a transparent anode electrode disposed over a glass substrate and a phosphor screen disposed over the anode electrode, the anode plate being positioned opposite to said electron source with a vacuum gap disposed therebetween;

wherein electrons are emitted from said nano-structures by applying a voltage between said cathode and gate electrodes, and are made incident on said phosphor screen to make luminous said phosphor screen.

61. (New) A display as recited in claim 60, wherein the nano-structures are substantially

vertical.

62. (New) A display as recited in claim 60, wherein the emitter-to-gate distance for each emitter is substantially less than one micrometer.

63. (New) A display as recited in claim 60, wherein the nano-structures have a surface density substantially higher than $10^6/cm^2$.

64. (New) A display as recited in claim 60,

wherein the cathode electrode is configured as a plurality of strip-like cathode electrodes extending substantially in the same direction in such a manner as to be spaced from each other at intervals in the transverse direction, each cathode strip for providing an independent source of electrons;

wherein the gate electrode is configured as a plurality of strip-like gate electrodes extending in such a manner as to intersect said plurality of cathode electrodes and to be spaced from each other at intervals in the transverse direction, and having one or a plurality of apertures at each intersection, each gate electrode for controlling the emission of electrons through the apertures along the gate electrode; and

wherein the anode electrode is configured as a plurality of strip-like anode electrodes each extending in such a manner as to be opposed to the corresponding one of said gate electrodes.